






Walter Bauer



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**Observations**  
ON  
**THE SYMPTOMS AND TREATMENT**  
OF THE  
**DISEASED SPINE.**

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Operative

THE SYMPTOMS AND TREATMENT

OF THE

DISEASED SPINE.

*Walter Bowen*

Observations

ON THE

SYMPTOMS AND TREATMENT

OF

THE DISEASED SPINE,

MORE PARTICULARLY RELATING TO

THE INCIPIENT STAGES;

WITH SOME

REMARKS ON THE CONSEQUENT PALSY.

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BY

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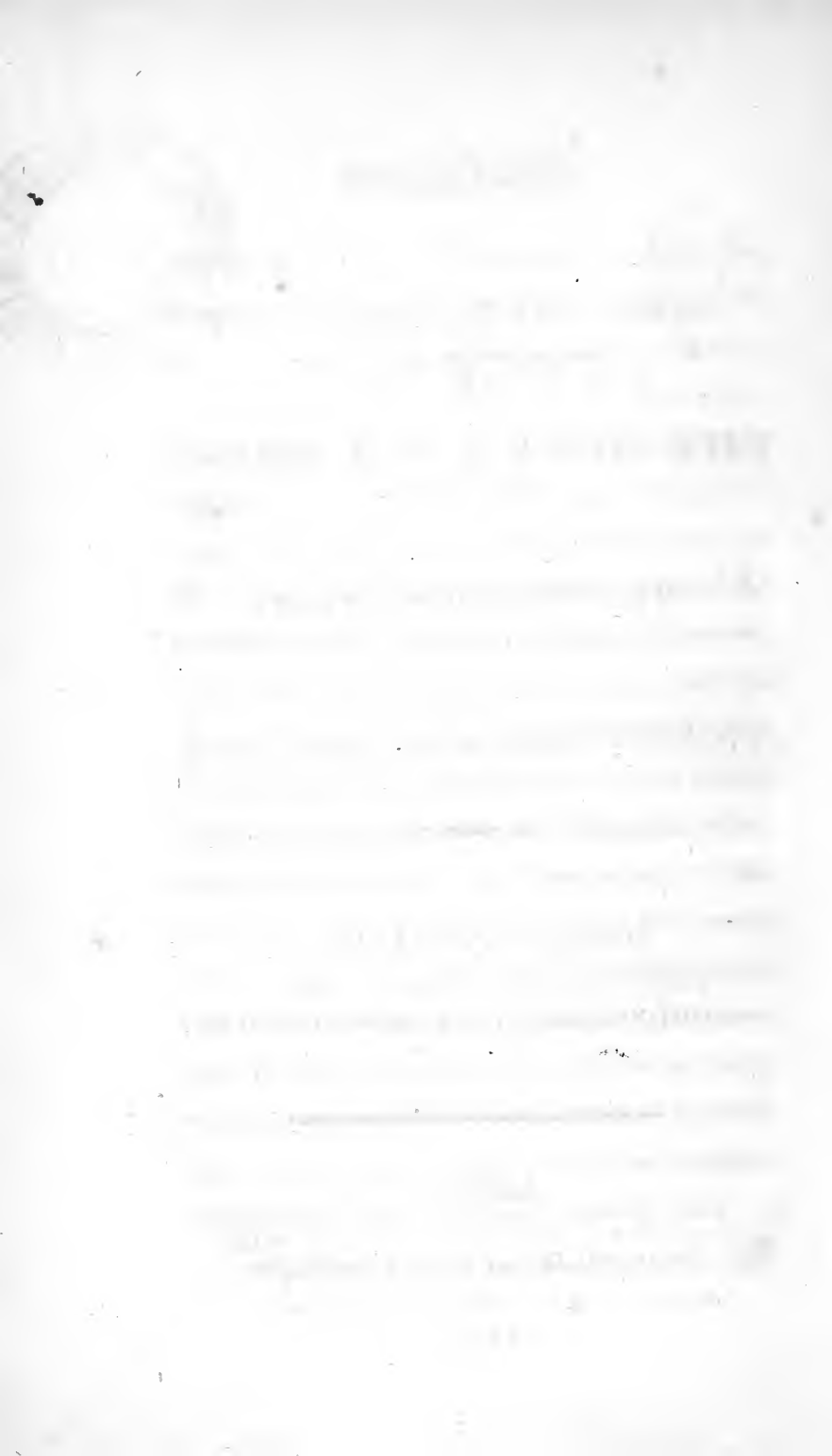
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## PREFACE.

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*IN the practice of Surgery, we have more frequently to lament the inefficacy of the art, from the advanced stage in which diseases are presented to us, than from any thing incurable in their nature; and although the increase of our knowledge from more accurate investigation, does not always advance our means of cure, it is no short step in science to discard ill-adapted or superfluous remedies, and to be able to recognize the real nature of a very serious disease at a period when it is in our power to cure it.*

*The carious disease, and some other affections of the Spine, which produce*

*pressure on the spinal marrow, are well known to be the usual cause of paralysis of the lower limbs; and when the paralysis has taken place, the spine is examined and found in a state of incurvation. Even the title of Mr. Pott's remarks, the principal authority on the subject, demonstrates that he takes up the subject only at the cotemporary period of actual caries and paralysis. The importance of attending to the earliest manifestation of diseases, particularly those of bone, need not to be dwelt upon; and if I am able to shew, that the diseased spine may, in most instances, be detected, and has characteristic and well marked symptoms, long before the period of caries and incurvation, I shall think the discussion not altogether unprofitable.*

*Those surgeons to whom it has happened to attend such cases in their advanced stages, from month to month, per-*

## PREFACE.

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*haps from year to year, without any power but to alleviate the most painful symptoms; without being able to say when or how the complaint will terminate; without even the last resource of amputation, which is held out in other cases of diseased bone:—those surgeons, I say, will be best able to appreciate the importance of this enquiry. Subjects of this nature cannot be too often brought before the Profession, and I have therefore endeavored to present, from the records of others as well as from my own experience, a short view of the known symptoms, and the inferences which we have been in the habit of deducing from them.*

*He would do an essential service to the Healing Art, who would arrange under certain and systematic titles, the very valuable remarks which are scattered through the various medical miscellanies. The other learned professions have a ma-*

*nifest advantage in this method, and the province of Surgery would be greatly benefited by approximating the numerous facts and observations of our predecessors on each particular disease. Many new relations and important conclusions might be drawn, from seeing the whole subject at one view, and from comparing the descriptions and remarks of different authors on the same disease. The works of Bonetus and Morgagni, are chiefly the records of their own stupendous labors, and the march and progress of the art since their time, has not been pursued after their example of arrangement.*

*I am, however, very far from being satisfied with what I have said on this subject. The view in which I have considered it is new, and as difficult as it is interesting; but the difficulty should rather excite our attention, than enervate our industry. If the various forms which*

*the complaint wears, before the curvature and paralysis take place, can be traced up to one adequate cause, a greater or less degree of pressure on the nervous system, an important point will have been gained; and my purpose will be answered, if others should be induced to prosecute the enquiry.*

*Golden Square,*

*March, 1815.*

## ERRATA.

*Page 7, line 16, for biffida, read bifida.*

*51, — 10, for achilles, read achillis.*

*79, — 7, for is, read are.*

## OBSERVATIONS, &c.

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GENERAL REMARKS ON INFLAMMATION OF BONE  
AND LIGAMENT, WITH RELATION TO THOSE OF THE  
SPINE.

**I**NFLAMMATION, whatever may have excited it, whether external injury, or constitutional disease, is the usual source of complaints of bone, as well as of most other kinds of organic structure; but inflammation has its peculiar and characteristic habits, according to the mode of vitality, as Mons. Bichat\* ex-

\* The different character of inflammation, as it attacks parts of different structure, and the laws governing it, which Bichat has so enlarged upon, I consider as the most important of modern improvements in surgery, opening a great field for future enquiry; and,

presses it, of the part which it attacks. The principal features or peculiarities of inflammation in bone, or in ligament, are, the very slow and gradual manner in which it proceeds through its first stages, and the exceeding sensibility which is developed in the more advanced periods of its progress; so that an injury, as a fall, or bruise, which is the cause of a caries of the spine, and all its consequences, may have been inflicted so long ago, as to have been never adverted to, or forgotten by the patient, till his attention is called to it by his surgeon. In some instances, even four or five years\* have elapsed, between the injury and the accession of the palsy; and although the health has been all this time

I may add, that the honour of it is due to our countryman, Dr. C. Smyth, who, in a paper in the Medical Communications, has laid down the principles of these distinctions, in a very clear and masterly manner.

\* See Dr. Jebb's and Dr. Pierce's Cases.



variously deranged, the cause of this derangement is seldom discovered, till the incurvation has taken place. The progress is, however, usually more rapid in children, from the greater vascularity and sensibility of these parts at the early periods of life.

When a ligament\* is in a state of inflammation, its bulk is considerably enlarged, and its enlargement must produce a corresponding pressure on all the surrounding parts. In situations where this

\* The fibro-cartilaginous substance interposed between the vertebræ, is neither, properly, cartilage nor ligament, but partaking of the nature of both; and I am not aware that its habits of disease are materially different from them, except that it is more readily converted into bone than ligament. Those who are familiar with the veterinary art, are well aware how often the intervertebral substance is ossified in aged horses. But I also include the external covering of the medulla spinalis, under the idea of a ligamentous membrane, and I have seen some cases in which a thickening of this membrane has been the cause of paralytic symptoms.

pressure does not materially interfere with the large nervous trunks, as in the knee, and other joints, it possesses no importance beyond itself as a disease of ligament; but, where the ligamentous circumference of the spinal marrow is increased in size, it must produce a greater or less disturbance of the functions of the parts below. Mr. Pott, in his first publication, was of opinion,\* that the body of the vertebra itself was augmented in size; but he corrected this opinion in his farther remarks on the complaint. Sir James Earle, still later, is of opinion, that some enlargement does actually take place in the bony structure of the vertebræ.

Now, although this kind of bone is peculiarly liable to disease, and we often see it diseased at the same time in different parts of the body, I believe that an enlargement of that spongy cancellated species of bone, which composes

the vertebræ, is a very unusual occurrence. I have no instance of it among a very considerable number of preparations of the diseases of the spine, and it is considered very rare by Götz,\* who has treated distinctly of the diseases of bone and ligament. The increase in size, from a deposition of osseous matter, in the cure by ankylosis, is different from an enlargement of bone by disease, and is not in any way the present subject of consideration. It is foreign to my present purpose, to enter at large into the history of the ulcerative, and carious stages of the disease; but it may be observed, that in those conditions, the pressure on the spinal marrow is produced, rather by the altered form and direction of the medullary canal, than by an increased bulk of the bones which are concerned.

\* *De Morbis Ligamentorum*, Berolin, 1799.

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ON SOME DISEASES CAPABLE OF PRODUCING PRES-  
SURE ON THE SPINAL MARROW, AND CONSEQUENT  
PARALYSIS.

**THE** medulla spinalis is often com-  
pressed by extravasations of blood, into  
the theca vertebralis, from external in-  
jury. The degree of violence, which  
accompanies this accident, may prove  
fatal; but in most cases, if the surgeon  
is aware of the nature of the accident, it  
is in his power to ward off, or relieve, the  
more serious consequences of it. Mor-  
gagni, and other writers, have described a  
large quantity of fluid, as issuing from  
the spinal canal, when it was opened at  
its superior extremity. The difficulty of

examining the spine with accuracy, must generally prevent our detecting it in other parts of the spinal canal, for the fluid escapes when we are sawing off the articulating processes.

I believe, that the effusion of fluid from the increased secretion of the inner membrane into the canal, is no uncommon cause of palsy, and other symptoms of pressure. From the analogy, indeed the identity of this membrane with the pia mater, we must suppose that whatever will produce hydrocephalus, and its consequences, will also produce an accumulation of lymph in the theca vertebralis, and the phenomena of spina bifida, are an additional confirmation of this remark. Dr. Maty considers it not impossible that the symptoms of pressure from fluid may be, at some time or other, so distinctly known, that future surgeons may venture to trepan the spine, to relieve it; that

period is, however, at present, very far distant.

In one instance which I shall relate, of decided paralysis ending fatally, I could discover, on the most accurate examination, no tumour, no disease of bone or ligament, nor any external appearance of disease; but at the part where all the uneasiness had been referred to, the medullary matter was almost entirely wanting for near three inches, at the lower part of the dorsal spine. I believe that this absorption, or absence, or condensation of the medullary matter, was, most probably, produced by the pressure of fluid effused in the theca, and that the fluid escaped, while I was taking out the vertebræ to examine them.

Tumours, of several descriptions, are found pressing on the spine, and, insinuating themselves into the space between the articulating processes, com-

press the spinal marrow. They \* are sometimes scrophulous enlargements of the neighbouring glands, or more frequently of a harder, and almost ligamentous structure; these may, for the most part, be traced to some accident, and are probably produced by the organization of fluid, thrown out at the time of the injury. Dr. Maty and Dr. Jebb have well described cases of this kind.†

Now none of these cases are accompanied with any alteration of the external form of the spine, and yet they produce all the symptoms, by which the pressure and its consequences are to be distinguished. It is a matter of surprize, that Mr. Pott, in the aphorisms into which he has con-

\* Med. Obs. 3. Jebb, case 6, page 23.

† The spine is also sometimes the seat of the venereal inflammation, and consequent palsy, of which, among others, a well marked case is detailed by Mr. Wilson, in the 3d vol. of the Medical and Chirurgical Transactions.

## 10 DISEASES PRODUCING PRESSURE.

condensed all his information on the subject, should admit, that “when these complaints are not attended with an alteration of the figure of the back bone, neither the real seat, nor the true nature of such distemper, are pointed out by the general symptoms, and consequently that they are frequently unknown, at least while the patient lives.”

Mr. Pott was aware that even the *carious* disease of the spine, was not always accompanied by curvature; but he had no precise idea of the symptoms, by which it was to be distinguished in such cases.

There are other cases of palsy of the lower limbs, the cause of which is connected with some derangement of the functions of the brain; and as these will, of course, have no symptom to detect them in the spine, it adds in no small degree to the difficulty and the perplexity of this subject.



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ON THE EARLY SYMPTOMS OF THE DISEASE OF  
THE SPINE.

**T**HE diseased spine is to be considered as a complaint of bone or of ligament, with respect to its cure; but most of its symptoms are derived from a disturbance to the functions of the nerves, which are dependent on the spinal marrow, for their influence. There are many diseases, in which the signs and effects are in a remote part of the body from the cause which produces them; certain parts and particular structures, are, for the wisest purposes, endowed with such obscure sensation, that they may be very far advanced in disease, before any great in-

convenience is produced, as long as these parts can perform the functions allotted them. The study of the sympathies of various parts with each other, in disease, and this seeming independance, and distance of the effect from its cause, of the symptom from the seat of disease, form very principal and important parts of pathology.

When a nerve is pressed upon, with an ordinary degree of pressure, a kind of torpor, or numbness, accompanied with a sense of stricture in the part which it supplies, is produced; increase and continue the pressure, and there is loss of volition; continue and urge it yet farther, and complete paralysis takes place, loss of sensation and volition; and the most trifling injury, during this state, will produce the death and sloughing of the part. The sense of stricture, or stiffness, accompanies every stage of the compres-

sion, and is an indication, that the disease does not originate in the brain. This has been well shewn, by Dr. Armstrong\* and others, to be a symptom of paralysis, depending on pressure on the spinal marrow; as distinguished from the general relaxed state of the muscles, in paralysis from compression of the encephalon.

To produce this compression on the spinal marrow, there must be swelling of the intervertebral substance, or of the coverings of the medulla spinalis, or derangement of the situation of the vertebræ with respect to each other; or, lastly, some of those tumours, or other causes, which have been enumerated in the preceding chapter; and I need not illustrate by examples, how very long the

\* Edin. Med. Journal, No. 36. See also a valuable paper of Dr. Yelloly in the Medico-chirurgical Transactions.

knee joint, and other parts of analogous structure, will continue in a thickened state, and how often they are recovered from that state, without advancing to caries, or suppuration. I shall, hereafter, endeavour to lay down the mode of discovering the local symptoms of this stage of the complaint.

From these two circumstances then, which may be distinguished as the *local* and the *remote* effects, are all the phenomena which Mr. Pott and others, both before and after him, have ascribed to the diseased spine, to be deduced; and if these phenomena had been more fully investigated, and traced to their source, we should long ago\* have been

\* “ Our fathers thought themselves a great deal  
“ nearer perfection, than we have found them to be;  
“ and I am much mistaken, if our successors do not,  
“ in more instances than one, wonder at our inatten-  
“ tion and ignorance; notwithstanding all our late  
“ improvements, there is still ample room to exercise

able to discover, that the most constant and most striking of them, do, and must necessarily exist, long before any curvature or caries has taken place, and are the usual forerunners of it. I say curvature or caries, for although a deformity of the spine, of the description to which I allude, always supposes caries of the body of the vertebræ; instances of a very considerable degree of caries, without any curvature at all, are by no means uncommon; particularly in the neck, and the loins, from the horizontal direction of the spinous processes of those vertebræ; and I have a preparation of the dorsal vertebræ, in which, the intervertebral substance is wholly removed, and the vertebræ ankylosed, without there having been any elevation of the bent spinous processes, or distortion of the form of

“ all the powers of many succeeding artists.” Pott’s Works by Earle, iii. 209.

the spine; yet this case was accompanied by paralysis.\*

I believe it is not common to consider the complaint under this point of view, and indeed so little of a systematic form have the discussions of this subject received, that the remarks of Mr. Pott, are only to be considered as rich materials for the use of his successors. No one can have more honour for the memory of Mr. Pott than I have, nor can he incur any blame, for his essay not being that which he never intended it to be; but, perhaps, the very confident manner, in which he has announced the cure of this complaint by caustic issues, has contributed to check our further enquiries on so interesting a subject. To prove, still stronger, how indistinct his notions were of the causes of the paralysis, I

\* See plate 2.

shall quote a passage in his latest publication —“ From this last circumstance  
“ (the loss of the use of the limbs) it  
“ has in general been called a palsy,  
“ and is treated as a paralytic affection ;  
“ to which it is, in almost every respect,  
“ unlike. The occasion of the mistake is  
“ palpable, the patient is deprived of the  
“ use of his legs, and has a deformed in-  
“ curvation of the spine. The incurva-  
“ tion is supposed to be caused by a dis-  
“ location of the vertebræ; the displaced  
“ bones are thought to make an unnat-  
“ tural pressure on the spinal marrow,  
“ and a pressure on that, being very  
“ likely to produce a paralysis of some  
“ kind, the loss of the use of the limbs,  
“ is, in this case, determined to be such:  
“ the truth is, there is no dislocation, *no*  
“ *unnatural pressure made on the spinal*  
“ *marrow,* nor are the limbs, by any  
“ means, paralytic, as will appear to who-

“ ever will examine these two complaints, “ with any degree of attention.” But it is much more pleasing to dwell on the excellencies of this great man; and it would be in vain to attempt a description of the disease, in a more accurate manner, than he has done it. In appreciating the importance and the cause of these symptoms, it would be easy to illustrate them by cases, which have been under my own direction and care. But that I may not incur the danger and the imputation of giving them an undue force, in consequence of pre-conceived ideas, and of predilection for my own notions, I shall rather make use of the records of others, and shall only insert a few cases of my own, which serve to explain some particular circumstance of the disease. It is to be regretted, that Mr. Pott has not accompanied his remarks, with the cases which suggested them, sketched in his



masterly manner, without the usual tedious detail, they would have formed a very valuable addition to his book. But the deficiency has been very well supplied by Dr. Jebb,\* and as his publication is scarce, I shall give the most interesting of his cases, particularly as they were for the most part under the eye of Mr. Pott.

But the more valuable records of these diseases, are those which existed long before the investigation of Mr. Pott; the papers of Dr. Knox and Dr. Maty, in the Medical Observations, and also, some very well, though quaintly described, cases of Dr. Pierce.† These are the more worthy of attention, as the Doctor, in some of them, was not aware, how very accurately he was relating a disease he knew but little about, and, as they were cured without the use of caustic, they

\* Loco Citat.

† See Cases.

prove that the complaint was not so unknown, nor so incurable, as Mr. Pott describes it to be, before his publication. I am inclined to abate the most part, if not all, of the miraculous effects, which he attributes to the Bath waters, and would rather suppose, the cure by anchylosis, was effected by rest and the efforts of nature, in the manner so well related by Dr. Armstrong.\*

But, to return to the symptoms of the disease, I said that most of the prominent features of this complaint, were to be derived from the interruption of nervous energy in the parts below the pressure. It is true, that debility of which adult patients complain, (for children, the most frequent subjects of the disease, cannot describe their sensations with any accuracy,) that inaptitude for motion, early fatigue, and relief from

\* Loc. Citat.

rest, are partly, perhaps, the result of the affected bone or intervertebral substance. But, in most cases, and more particularly when the disease is in the usual place, the superior dorsal vertebræ, the great characteristic circumstance and symptom, is a commencing paralysis of the abdominal muscles. It is surprising how very early in the disease this symptom may be detected, when the attention is directed to it. It is sometimes described as an oppression of breathing, tightness of the stomach, a band tied round the belly, torpor of the abdomen, and by other expressions in different patients. It produces costiveness, retention of urine in a more advanced stage; in short, in whatever of these symptoms you examine it, some function of the abdominal muscles is recognized to be impeded. No author who has mentioned the disease, has omitted this symptom under some name

or other, although it has never, I believe, been fully explained. “ When it attacks  
“ a child,” says Mr. Pott, “ who is old  
“ enough to have walked properly, its  
“ awkward and imperfect manner of using  
“ its legs, is the circumstance which first  
“ excites attention, and the incapacity of  
“ using them at all, which very soon fol-  
“ lows, fixes that attention, and alarms  
“ the friends.

“ The account most frequently given  
“ is, that for some time previous to the  
“ incapacity, the child has been observed  
“ to be languid, listless, and very soon  
“ tired; that he was unwilling to move  
“ much, or briskly; that he had been  
“ observed frequently to trip and stum-  
“ ble, although no impediment lay in his  
“ way; that when he moved hastily or  
“ unguardedly, his legs would cross each  
“ other involuntarily, by which he was  
“ often and suddenly thrown down; that

“ if he endeavoured to stand still, and  
“ upright, unsupported by another per-  
“ son, his knees-would totter and bend  
“ under him; that he could not, with any  
“ degree of precision or certainty, stea-  
“ dily direct either of his feet to any par-  
“ ticular point, but that in attempting so  
“ to do, they would be suddenly and in-  
“ voluntarily brought across each other;  
“ that soon after this, he complained of  
“ frequent pains and twitchings in his  
“ thighs, particularly when in bed, and  
“ *of an uneasy sensation at the pit of his*  
“ *stomach*; that when he sat on a chair  
“ or a stool, his legs were almost always  
“ found across each other, and drawn up  
“ under the seat; and that in a little  
“ time after these particulars had been  
“ observed, he totally lost the power of  
“ walking.

“ These are the general circumstances  
“ which are found, at least in some de-

“ gree, and that pretty uniformly in most  
 “ infants and children, but there are  
 “ others which are different in different  
 “ subjects.

“ If the incurvation be of the neck, and  
 “ to a considerable degree, by affecting  
 “ several vertebræ, the child finds it in-  
 “ convenient and painful to support its  
 “ own head, and is always desirous of  
 “ laying it on a table or pillow, or any  
 “ thing to take off the weight. If the  
 “ affection be of the dorsal vertebræ,  
 “ the general marks of a distempered  
 “ habit, such as loss of appetite, hard  
 “ dry cough, *laborious respiration*, quick  
 “ pulse, and disposition to hectic, appear  
 “ pretty early, and in such a manner as  
 “ to demand attention: and as in this  
 “ state of the case there is always, from  
 “ the connexion between the ribs, ster-  
 “ num, and spine, a great degree of  
 “ crookedness of the trunk, these com-

“ complaints are by every body set to the  
“ account of the deformity merely. In  
“ an adult, the attack and the progress  
“ of the disease are much the same; but  
“ there are some few circumstances which  
“ may be learned from a patient of such  
“ age, which either do not make an im-  
“ pression on a child, or do not happen  
“ to it.

“ An adult, in a case where no vio-  
“ lence hath been committed or received,  
“ will tell you, that his first intimation  
“ was a sense of weakness in his back  
“ bone, accompanied with what he will  
“ call a heavy dull kind of pain, attend-  
“ ed with such a lassitude, as rendered a  
“ small degree of exercise fatiguing: that  
“ this was soon followed by an unusual  
“ sense of coldness in his thighs, not ac-  
“ countable for from the weather, and a  
“ palpable diminution of their sensibility.  
“ That in a little time more, his limbs

“ were frequently convulsed by involuntary twitchings, particularly troublesome in the night; that soon after this he not only became incapable of walking, but that his power either of retaining or discharging his urine and fæces were considerably impaired, and his penis became incapable of erection.

“ The adult also finds all the offices of his digestive and respiratory organs much affected, and complains constantly of pain and tightness at his stomach.”

In this admirable description of the complaint it is seen under many views. If we refer to the cases of Dr. Jebb, or Dr. Pierce, under some one expression or other, the paralysis of the abdominal muscles will be recognized. So early does this present itself, as a symptom of compression of the spinal marrow, that it is very generally, for some time, treated



for the complaint which it appears most to resemble; I have seen it called asthma, and prescribed for as such for several months; it is often called dyspepsia, and even diseased liver, from the sense of uneasiness and stricture over the region of the liver and the stomach;\* sometimes it is taken for a disease of the colon or rectum, from the costiveness and pain that accompany it; the bladder, also, being unable to perform its office, the cause of this impediment is sought for in the urethra or the kidneys.

The bladder and rectum, in more advanced degree of pressure, become themselves in a great measure paralytic, independent of the assistance they are de-

\* Dr. Latham has called our attention lately to another symptom of lumbar abscess and diseased spine, in the 4th volume of the Medical Transactions, and that is, a large abdominal tumor, the cause and nature of which was before very difficult to explain. I refer to the paper for the detail of Dr. L.'s ideas on this subject.

prived of in the impeded action of the abdominal muscles. But, at this period, the disease is characterized by too many serious symptoms, to leave us in doubt of its particular nature.

It will perhaps be said, that this symptom, so various are its appearances, is in many points common to other diseases; that if we were to look to the spine for the cause of all these affections, there are very few complaints of the trunk, or lower limbs, which may not be suspected to have this origin. To all this I would answer, that the disease is so often overlooked, in its early and curable stages; that no harm can happen from an examination of the spine in any of these cases; that the attention of the professional attendant being directed to this probable cause of the complaint, he will, for the most part, be able to distinguish the real nature of the case, and to decide whether

the spine has or has not any thing to do with it; and that the usual error is, that the spine is never thought of, before the caries has actually deranged its form to some extent. In this, as in many other cases, as we ascend to the true cause of diseases, and trace the symptoms to their proper source, several minute but distinct features present themselves to an attentive observer, which were lost in the general idea of pain or uneasiness.

I shall pass over the description of the latter stages of actual paralysis of all the parts below the pressure. They have been so accurately described by Mr. Pott, Sir J. Earle, and Dr. Jebb, that whatever I should say, would be but a repetition of what these writers have done; and shall now make some remarks on examining the spine when it is suspected to be diseased.

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ON THE MODE OF DISCOVERING AFFECTIONS OF THE  
SPINE, BEFORE THE PERIOD OF INCURVATION.

**T**O describe the various inflections which are naturally made by the spine, between the head and the pelvis, or the peculiarities of each of the vertebræ, would, in the present state of surgical science, be a very superfluous labour; no one can be supposed uninformed on this matter, nor can any one be able to distinguish its deviations, who is not well acquainted with its natural structure. I shall therefore only remark, that it is necessary, in these examinations, to bear in mind, that the spinous processes of the cervical and lumbar vertebræ are horizontal, and those of the dorsal vertebræ are turned down-

wards, each being covered by the one above it, and that the spinous process of the last cervical vertebra has naturally a larger projection than the others, which might be mistaken for morbid prominence, if this peculiarity were not adverted to.

The symptoms of the diseased spine, will always take their character from the part of the spine which is affected; for the functions which are impeded will depend entirely on that part. But there are some circumstances common to the disease in every part of the spine; one of the principal of these, is the relief which is felt in the horizontal position, from all the uneasiness it produces. If the disease is in the neck, there will be pain, or difficulty in the rotation, and other motions of the head, and the oppressed breathing, will be one of the most strongly marked features.\*

\* A man, who had been for some time using mercury for a disease of the tibia, had for a long time

If the back is the seat of the disease, the oppression at the stomach, as it is called, or the torpor of the abdominal muscles, will be strongly marked. In the loins, both these indications are wanting, and the symptoms principally regard the bladder and rectum, whose offices are in a greater or less degree disturbed, according to the degree of pressure made on the nerves which supply them.

But one of the great difficulties in these cases, is, that although the symptoms generally indicate pressure on the spinal marrow, it is not always in our power to say, in what precise part the pressure is made. I have more than\* once waited

complained of pain and stiffness when he moved his head; on a sudden and violent turn of the head, he was seized with convulsions, and died in a few hours. When he was examined after death, I found the *processus dentatus*, fractured and detached from the body of the second vertebra. It was carious throughout.

\* See Cases.

several weeks, without being able to say distinctly, at what part the disease was taking place, although the paralysis had advanced to the degree of depriving the patient of the use of his limbs. There are two chief circumstances, which serve to assist us in this difficulty—greater sensibility to the touch, and greater susceptibility of the stimulus of heat; but the former is our more frequent guide than the latter.

When any of the symptoms,\* which I have endeavoured to describe, accompanied perhaps with a slight degree of debility and numbness, or torpor of the lower limbs, lead to a suspicion of an incipient complaint of the spine, the whole column should be very attentively

\* To these symptoms it may be added, that a difficulty of turning in bed, and also relief experienced from bending the body backwards, are often experienced by patients, particularly those of early age, at this stage of the complaint.

examined, and if there should be the slightest degree of unnatural projection, or even tenderness on pressure, in any one part, there can be but little doubt that the seat of the malady is there. In the very early stage of the disease, however, that I am supposing it is possible that there may be considerable disease, and yet no manifestation of it, either to the sight or to the touch. So very low is the degree of sensation, allotted to bone and ligament, in a healthy state, as I have before explained, and so long is it before this quality is acquired by disease, that the smallest degree of tenderness to the touch, is an evidence of morbid action within. But although the most trifling sensation of pain, on pressure of any given part, would lead us to a conclusion, and particularly when the sensation is the same on repeated trials, we have not always this direction to guide us, and under



such a case, I have frequently detected the disease, by the part being more susceptible of the stimulus of heat.

A sponge wrung out of hot water, and carried down the spine, will often give a very acute degree of pain, while passing over the part where disease is going on. The effect of this experiment I first discovered by accident; when I had been applying leeches to a diseased spine, the gentleman, who was my patient, complained of great pain, when the hot sponge came close to the projecting vertebræ; and on reflecting how much more sensible of the power of heat an inflamed part was, I was led to repeat the experiment in every case of diseased spine, which offered to my inspection. I have not been able to reduce the result of this experiment to any given rules; sometimes I expected a great degree of pain, and it did not occur; at other times, it took place

where I least expected it. But, it requires long experience and many trials, to speak with confidence, on a subject of such considerable importance, as an early and decisive diagnosis of the disease. This, however, may be safely concluded, that although the absence of pain on this application of heat, is not an evidence that there is no disease, the feeling of acute sensation in any one part, is sufficient to mark that part as the seat of the disease. Whatever circumstance, however trifling, leads us to an accurate diagnosis of this formidable complaint, cannot be too much dwelt on, or attended to, at the only period when it is in our power to prevent the deformity, and other serious consequences, which usually are produced by the continuance of the disease.

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ON THE MEANS OF CURE.

**W**HEN the disease is fully understood to be either actually caries, or an inflamed and thickened state of the parts, that will certainly lead to caries of the vertebræ, and that all the train of important symptoms, are rather the consequence of the peculiar situation of the bones, with respect to the spinal marrow, than any thing extraordinary in the nature of the complaint; it will then evidently follow, that the treatment will be the same as in a similar complaint of parts of an analogous structure, though differently situated. Mr. Pott had all the merit of rendering the use of caustic issues general in the paralytic stage of the disease, and so great

was his confidence in this remedy, that he almost recommends it to be applied to the spines of unhealthy scrofulous children, to prevent a disease which he thinks they may probably be afflicted with. This is, however, carrying a favorite notion very far.

Sir J. Earle has remarked, that the use of caustic was known to several ancient writers before Mr. Pott, and has quoted some passages to illustrate it: the remedy, however, was not in general use before his time. I shall add to the authorities quoted by Sir J. Earle, one other; Mercurialis has described the disease and the remedy, almost as well as Mr. Pott himself.\*

\* *Utrum verò morbus sit in initio medullæ spinalis, vel in osse sacro, eo argumento cognoscitur, quia ubi est in initio spinalis medullæ, et brachia et omnes partes inferiores morbo occupantur; si autem sit in osse sacro, solum partes infra illud os laborant.— Quo ad chirurgiam remedia quædam sunt quæ accommodantur ut sunt cauteria, &c. Hieronymi Mercurialis de Morbis Puerorum, cap. de Paralyti et Torpo.*

The great expectations and faith of practitioners in the effects of caustic issues, has, however, gradually been shaken by repeated disappointment. M. Camper\* many years ago, published his diminished confidence in the remedy; and more recently, Dr. Armstrong and Mr. Baynton, have more strongly expressed their disapprobation of these issues.

Under this variation and opposition of respectable testimony, where shall the practitioner place his reliance; how is he to direct his practice? In the first place, the caustic issues can have no specific effect on the cure of the palsy of the limbs; for that can only be cured by removing the pressure, or by the medulla spinalis adapting itself and its functions

\* J'avoue que M. Pott a proposé des vésicatoires et des caustiques sur les cotés de l'épine du dos vitiè mais le success ne le repond pas. Camper Prix de l'Academie, t. v. p. 2. 828.

to the altered and anchylosed form of the canal which receives it; and this must require a certain, but indefinite, lapse of time. So far then, the effect of the caustic must be beneficial only, as it contributes to subdue inflammation, in the first stages; or to arrest the progress of caries, and promote anchylosis, in the more advanced periods. In the enlarged state of the ligaments, and other appendages to the joints of the extremities, we commonly find more benefit from the application of leeches and blisters, but above all, from the most unequivocal state of rest, than from any other treatment; and it is for the most part successful, if it is commenced sufficiently early, and continued for a sufficient length of time.

Mr. Ford was so impressed with the importance of absolute rest, confinement to bed, that he remarks, “ It has happened “ to me so frequently to observe, that

“ this mode of treatment has been parti-  
“ cularly successful in those cases where  
“ a paralytic state of the lower limbs  
“ was added to the other inconveniences  
“ of the complaint, that I have been  
“ induced to think, that this paralytic  
“ symptom, alarming as it is, conduces  
“ nevertheless to the recovery of the pa-  
“ tient. Without doubt, this circum-  
“ stance of the paralysis, indispensably  
“ compels the patient to a state of qui-  
“ etude in a horizontal position, whereby  
“ the pressure of the head is taken en-  
“ tirely from the distempered bones, and  
“ the establishment of an union between  
“ their ulcerated surfaces, becomes thus  
“ more practicable than it otherwise  
“ would have been; consequently the  
“ weak state of the limbs, with the other  
“ symptoms of general disease, sooner  
“ disappears.”\* And Mr. Baynton has

\* Observations on the Disease of the Hip Joint, &c.

also well insisted on the benefit of absolute rest, and described an ingenious bed, by which, he thinks, it may be better accomplished than by the common couches. The daily necessity of dressing the issues is incompatible with the very great degree of repose, which some cases, in their advanced stage, require; and in the earlier periods, I should have more confidence in the application of leeches and blisters, together with rest and confinement; but there are very many cases, in their intermediate stages, in which the issues have a decided and very evident benefit. I believe that they are more necessary, and more beneficial, when the disease is in the lower part of the spine, or towards the os sacrum, than when the cervical or upper dorsal vertebræ are the seat of the complaint. Perhaps the process of ankylosis does not go on so favourably in parts far removed from the



centre of circulation, and requires the stimulus of some external irritation to promote it; or, whatever be the reason, I have several times observed the fact.

It is, I think, no argument against the use of caustic issues, that they do not succeed in every case; nor that many cases have been cured without it. Every day's experience shews us the beneficial effects of it, in checking external suppuration of parts, affected with nearly the same disease, and of the same structure; but it must be allowed, that it has, in consequence of Mr. Pott's strong recommendation, been used too freely and indiscriminately.

I have not entered at large into the relief or treatment of each particular symptom, which may arise in the course of the disease; nor have I considered it necessary to discuss the benefits to be expected from the various machinery in common

use. The state of repose which I have supposed necessary, is, in most cases, incompatible with the use of them, as well as some more important objections, when females are the subjects of the disease. Where the general nature of the complaint is well understood, the various appearances which it puts on, will become plain and evident; the slow action of the bowels will require the assistance of mild or more active purgative medicines, according to circumstances. The bladder will often require the aid of the catheter, for a longer or shorter time; opiates will be exhibited, to procure sleep, to moderate the action of the kidneys, or to allay pain. If fever should occur, either as symptomatic of the irritation of the issues, or as a consequence of the disease within, that will demand a treatment adapted to its nature and degree; the diet should be as liberal as the stomach can easily

dispose of, and to this, the use of the bark may, when necessary, be added.

It is a matter of great uncertainty at what period the anchylosis will take place; in early life, before the natural ossification is complete in the vertebra, it is usually not a very tedious process; but in more advanced age, there is no possibility of saying how long this will require to be accomplished. I have known it as long as four or five years in the lumbar vertebræ of a lady about fifty years of age, during the greater part of which time, she was confined to her bed, entirely paralytic; but, at the end of this tedious confinement, she was able to walk and perform all the offices of health. On the contrary, \* Soemmering has related a case of fracture of the vertebræ, which he has thought of sufficient im-

\* Bemerkungen über Verrenkung und Bruch des Ruckgraths. Berlin, 1793.

portance to be the subject of a distinct publication, and in which, the union of bone had advanced almost to ossification, in three weeks. But, however long this coalescence of the ulcerated surfaces of the vertebræ may be delayed, there is reason to hope that it will at length be accomplished, as long as no external sup-  
puration has taken place.

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## CASES.

**I** WAS requested by a tradesman in my neighbourhood, to examine his urethra, under a suspicion that he had a stricture of that canal: he had been for some time under the care of a surgeon of eminence, for that disease; but, as he gained no advantage, he sought for farther advice. He came into my house with difficulty, and was unable to walk or stand without the assistance of two sticks; he could not empty his bladder without great effort, and was a long time doing it; and his bowels constantly required some purgative medicine. He complained of a sensation across the belly, as if a broad band were

tied tight round it, and had been gradually declining in health for more than a year. He had, two years before, violently strained his back, by lifting a large weight; but, after a few days' stiffness, he neither felt or thought any more of it. I told him that, to satisfy him, I would pass a bougie; but that this disease was manifestly in the spine. A large bougie passed easily into the bladder. On the most accurate examination, I could discover no projection, nor tenderness, on pressure; nor increased sensibility on the application of heat, nor any circumstance by which I might judge of the precise seat of the disease; and I told him that he had better confine himself to his bed, and I should, most likely, soon be able to say where the complaint was. This, however, he was unwilling to do; and saw me again in about a fortnight, when his symptoms were manifestly worse, and he

thought there was some slight tenderness on pressure round the superior dorsal vertebræ. I made two issues by caustic at this part, which seemed to give some relief, at first, to his bladder; but, shortly afterwards, he was compelled to do what I had advised, for the paralysis increased so much as to confine him to his bed. He now began to feel considerable pain, when I pressed upon the lumbar and lower dorsal vertebræ, and I was about to have applied caustic issues to this part; but an extensive sloughing took place on the nates, which spread to the great trochanter, on each side; and he died, after having been confined to his bed for about three months.

On opening the body, the abdominal viscera were all healthy, the spine was not carious, there was no apparent tumour in any part of it; but when the lower dorsal and lumbar vertebræ were

taken out, and the articulating processes sawed off, the medullary matter of the medulla spinalis, was entirely wanting, for more than two inches; the theca seemed little more than an empty bag, which, when cut into, had an unusually vascular appearance, and much thickened. It seems most probable, that the pressure, in this case, had been produced by an accumulation of fluid, which escaped while the vertebræ were being taken out; the compression of which had caused the absorption, or removal, of the medullary matter. In the earlier stage of the complaint, the pressure seemed to be in a higher part of the spine;\* but the appearance which I have described, was an abundant cause of his death.

\* Dr. Jebb has also remarked, that the effects are sometimes extended above, as well as below, the seat of the disease, as from the loins to the back, and also occasionally some other peculiarities; as pain in one arm, or one finger, which also I have seen, but these are unusual occurrences.



## CASE II.

A Gentleman consulted me for, what he conceived to be, a complaint of the rectum. He told me, he had no pain, nor swelling, but an undescribable difficulty in passing his fæces; and that the bladder also, in a lesser degree, was affected in a similar manner. On enquiry, I found that he had for many months, been confined to his bed for a palsy of the lower limbs, which had been medically treated for palsy; and that the day before he had the stroke of palsy, as it was called, he happened to fall, in such a manner, that his legs separated with great violence from each other, and produced considerable pain in his loins, which went off again, and was no more thought of. I examined the spine minutely, but there was no evidence of disease to be detected. He complained of

slight uneasiness, when I pressed hard on the upper part of the os sacrum, and I applied the caustic to make two issues there. From this time he gradually recovered, without a farther confinement, which I had suggested; and in a few months was so well, as to venture to heal up his issues.

### CASE III.

An Upholsterer brought his son, a lad of about ten years old, to consult me, concerning the declining state of his health. He had, till within six months of my seeing him, been remarkably healthy and active; but had now become pale, indisposed to move or to play, without any distinct pain, except, occasionally, what he called, uneasiness of his bowels, which his costive habit was said to account for. I recollected that about twelve months before, I had been called to the

same lad, who had got into the way of a hackney coach, which went over his back; but, as I was not at home, he became the patient of another surgeon. This circumstance led me to examine the spine with attention; but there was not the least deformity to be discovered. He retired from me, when I pressed with some force on the side of the middle dorsal vertebræ, and felt some uneasiness, more than in any other part. A hot sponge passing over that place, gave him actual pain, when the other parts were not affected by it. I advised, that the lad should be kept very quiet, as much as possible in a horizontal position, and that the part should be repeatedly blistered. He very soon began to recover his alacrity and health, and was restrained from play, with as much reluctance as he had formerly shewn to go to it. Several boils, which were pro-

duced by the blisters, were thought to have contributed to his recovery: however this might be, he got quite well in about four months.

#### CASE IV.

I was desired to see a girl of about twelve years old, who was supposed by her mother to be afflicted with symptoms of gravel. She had difficulty and pain in emptying the bladder, and a constant pain and tightness round the margin of the chest, with laborious breathing after exercise, but more than the exercise would account for; and it was remarked, that all her complaints were worse after moving or walking; she was sooner tired than her companions, but suffered no other debility. I begged to examine the spine, and there was a very sufficient cause for all her complaints; for the se-

cond dorsal vertebra was evidently beginning to project beyond the rest. She did not recollect any fall or injury she had met with. I fully explained to her mother, the importance of her case, and the necessity of meeting it with the most decisive treatment; which, after some consultation and reflection, was complied with. She was entirely confined to her bed, and six leeches were applied to the projection; after which, a blister was put on each side of it. The leeches and blisters were repeated five or six times during her confinement; but the symptoms very soon began to ameliorate, and in two months, there was no manifest inconvenience produced by the complaint; it was, however, six months before she was permitted to walk.

CASES BY DR. JEBB.

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T. C. aged thirty-two, originally of an healthy constitution, was admitted a patient in St. Bartholomew's Hospital in November, 1777. He sometimes complained of a pain, but generally of a *numbness, at the margin of the thorax*, under the cartilages of the ninth and tenth ribs of the left side, with a cough, spitting, and shortened respiration, when he lay on that side; the spinous process of the seventh or eighth dorsal vertebra was considerably protuberant; his belly was prominent and flaccid, with a *numbness extending itself over the whole abdomen*, and *great debility of the muscoli*

*obliqui and traversales*, whenever he voluntarily attempted to contract them; a sensation of chillness prevailed in his knees, with a want of feeling in the fore part of his legs, and an inability of drawing them up in bed.

To these symptoms were added twitchings in the flexors of his legs, and numbness of the feet, a jarring sensation in the tendo achilles of one foot, and transient pains in both, which, with the chillness, proceeded, as he conceived, and repeatedly declared, not from the protuberant part of the spine, but the lumbar vertebra immediately above the os sacrum.

The quickness of the pulse, the florid appearance of his countenance, and state of respiration, strongly suggested the idea of hectic fever prevailing in the system.

These affections, with a numbness of the sphincter ani, costiveness, and a want of consciousness when his fæces were

ejected, completed the catalogue of his complaints.

Upon repeated enquiries, he constantly declared, that he did not recollect any strain, or other accident, to which he could ascribe his present sufferings.

It appeared that it was nearly three years since his disorder commenced. His first complaint was a rheumatic affection in the side, which was cured by gum guaiacum. About this period he imagined he got cold, a pain and soreness in the small of his back succeeding to that complaint, and a sense of inward weakness in his breast. These symptoms were exasperated by a cough; numbness of the abdomen followed next in order, with a gradual accession of the other symptoms, until he was confined to his bed.

Before the application of the caustics he had made trial of the cold-bath, mer-



curial frictions, tinctura sacra, volatile liniment, a strengthening plaister to the loins, and the screw-chair, without any good effect whatever. The cold-bath and screw-chair were evidently hurtful.

The caustics being applied, according to Mr. Pott's directions, on each side of the protuberance, soon produced a sensible effect; the twitchings in his thighs and legs were increased, and in some degree sensation and voluntary motion were restored in his feet; but the advances to a perfect cure were not very rapid during the first six months.

He next recovered the power of expelling flatus per anum; during this period the curvature appeared to diminish: the numbness in his insteps remained for many months; but at length, all his complaints wore off, his former state of health returned, and he intirely recovered his former vigour.

R. H. aged nineteen, was admitted into St. Bartholomew's Hospital in December, 1777.

At the time of his admission he complained of pain in the muscles of his thighs, and the fore part of his legs, which sensibly grew worse at night. His knees and ancles were extremely feeble. He walked with great difficulty and pain, but had never been affected with the usual symptoms of numbness or chillness in his lower extremities, during any period of his disorder. *He felt a soreness under the short ribs of both sides*, which was much exasperated by a troublesome cough. From the parts thus affected, lancinating pains frequently proceeded down his thighs, which more particularly distressed him when he lay on his belly; his

pulse was tolerably strong, but very irregular. He was also much emaciated: a white and viscid mucus was frequently expectorated, particularly in a morning; his general debility continually increased.

The spinous process of the ninth or tenth dorsal vertebra was very protuberant; but he conceived the pain and weakness to proceed from a point considerably below that protuberance.

Upon my examination into the cause and progress of his complaints, he informed me that they were the consequence of a strain, received about a year before his admission, from his foot slipping while he was ascending a ladder with a sack of oats; he felt a sudden shock affect the part, which became afterwards protuberant; he perceived no immediate inconvenience, but proceeded in his business as before.

About two months after the accident,

having been exposed through the whole of an inclement night to the cold, he was taken with a shivering, and felt a rheumatic pain suddenly seize the part first affected by the shock; a second fit of shivering, with pains at the bottom of his belly, took place within six weeks after the first; the protuberance now became apparent, and gradually increased, with debility and the symptoms already described.

Within a month after the application of the caustics, he grew evidently better: his pains grew less troublesome, his strength gradually increased, until, at the close of about seven months, he was dismissed, perfectly free from all complaint.

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J. D. was admitted into St. Bartholomew's Hospital in February, 1779.

He appeared to suffer much from a scalding of his water, which incessantly dribbled from him. He complained also of great languor and debility, particularly in his knees and back, and numbness in his feet; a white mucous sediment appeared in his urine; an obstinate costiveness, with frequent tenesmus, shortness of breath, a cough, loss of appetite, and want of rest, accompanied these complaints.

He related, that his disorder originated from a strain which he received from carrying an heavy load, about seven years before the time of his application for relief. Upon examination of the spine, one of the lumbar vertebræ appeared considerably protuberant: upon further enquiry, two fistulous orifices were discovered; one in the thigh, the other in the groin of the opposite side, from which pus was almost constantly discharged.

From the depth and direction of these fistulæ, and the patient's history of his disorder, no doubt was entertained of the source of this discharge being seated in the loins.

The caustics were applied, but he died in a few days, perfectly exhausted, before any advantage could possibly have been derived from their use.

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In the beginning of the year 1779, I attended a boy about seven years of age, who laboured under the symptoms of obstruction in the mesenteric glands. His belly was prominent and hard, his stools were slimy, and he was much reduced in consequence of an hectic fever, attended with cough, loss of appetite, and restlessness. His manner of walking was awkward and irregular; and he frequently

complained of pain in the thigh of the right side, and a violent itching in the groin.

Upon surveying the spine, I observed that species of inflexion to which nosologists give the name of scoliosis, and upon a second examination, some weeks afterwards, a slight degree of protuberance of the tenth or eleventh dorsal vertebra began to disclose itself.

I had tried some of the ordinary remedies prescribed in scrofulous cases, before the protuberance was discerned, without much success. Upon the discovery of this appearance, I earnestly recommended the application of the caustics, according to Mr. Pott's directions, but my remonstrances were in vain. At the end of eighteen months, I saw this child bent almost double, the use of the lower extremities utterly lost, and with all the symptoms of approaching dissolution.

which took place in the course of a few days.

I am much inclined to believe that this child might have been saved by an application of the caustics, immediately upon the discovery of the protuberance in the spine.

Since the time of my attendance upon the preceding case, I have very frequently seen children, nearly of the same age, labouring under similar complaints, which I have reason to presume were derived from the same source. In some, the lumbar vertebræ were evidently protuberant; in others, a small degree of protuberance might be observed in the lower vertebræ of the back, attended with pain upon the slightest touch. In all these cases there was a considerable prominency of the belly, and other signs of obstruction in the glandular system. Is it not therefore reasonable to suppose, that one of the



conglomerate glands, of which many are found in the vicinity of the lumbar vertebræ, may frequently be the original seat of the disease, and that from thence the ulceration is extended to the vertebræ themselves?

In other cases there is ground for suspicion that the bodies of the vertebræ, or the intervertebral substance, are primarily affected, the same scrofulous disposition inducing this distemper, which is known so frequently to affect the acetabulum of the thigh, the joints of the elbow, and the knee, with the corresponding ligaments; disorders to which the name of white swelling is commonly assigned.

When this disorder affects the eyes, or such of the conglomerate glands as evidence themselves to the touch, the nature of the complaint is quickly perceived, and issues are ordered with singular advantage.

With equal propriety surely may similar drains be recommended in the neighbourhood of the diseased parts, when the joints are affected, whether they be the joints of the extremities or the articulations of the spine.

The paralysis of the lower extremities, with a debility in the functions of the bladder and the rectum, which take place when the spine is the seat of scrofula, are the mere effects of the disorder, occupying the vicinity of large portions of that substance, which is the proper seat of sensibility and voluntary power; and therefore, ought by no means to enter into the definition of the disease. Not only an erroneous description of a disorder, but even the assigning of an improper name to a complaint, as Mr. Pott has repeatedly observed, leads to an improper treatment of that disorder; and thus the art of medicine often perpetuates

the evils, which it is its object to remove. In consequence of such misconception, I have frequently seen the whole class of nervous medicines employed, and the Bath waters prescribed, to relieve the paralysis of the lower extremities, when, after the cause of the disorder was detected, it was obvious that they must necessarily have aggravated the disease; and I am very much inclined to believe that many other disorders, reputed nervous, are the effects of complaints merely local, and are frequently derived from some affections of the viscera of the abdomen, for which medicines of a very different operation should be prescribed.

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A boy, about twelve years of age, received a blow from a stone, which struck his loins. In the evening of the same

day he was seized with a shivering, which lasted about five minutes; a fever succeeded, which ran high during the night, but abated towards the morning. At the same period of time a contraction of his legs took place, attended with great debility of his lower extremities. He complained of pains all over him, but more particularly in his stomach and the small of his back.

As the accident, which gave occasion to these symptoms, was not known to the friends of the patient, the disorder was treated as a feverish complaint. It sometimes remitted, at other times a perfect intermission of the feverish symptoms took place. The power of moving his limbs was daily diminished, until, at the close of ten days from the time of the accident, he was utterly incapable of lifting them from the ground. At this period no swelling was perceptible on his back.

In about a month after the time of receiving the injury, his situation was truly deplorable: his appetite was lost, his pulse was quick and feeble; he was affected with a cough and purging, and the *facies hippocratica* was evident to an extreme degree.

At this time a lump was discovered, about the size of a large egg, not much inflamed nor very painful, which comprehended the second and third vertebræ of the loins, not unlike a beginning abscess.

A large incision was made into the tumour, and two beans inserted: a kindly suppuration took place on the third day, and at the end of a week he was considerably better; his countenance was more enlivened, his pulse improved, and the power of moving his limbs in part regained.

The issue discharging freely, the swelling gradually abated, and in the space of a month entirely disappeared.

The issues were dried up sooner than the gentleman who attended had directed. At the end of three months he was able to walk a considerable distance with little inconvenience, but every material change of weather very sensibly affected him.

Few instances, hitherto observed, more strongly point out the operation and advantage of the issues.

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These very accurately described cases were all treated by the caustic issues; but it must be remarked, that such was the degree of paralysis that accompanied them, that they were, for the most part, necessarily confined to their beds, and had, therefore, the benefit also of absolute rest.

I shall now give some cases, in which the cure was accomplished without the

use of caustic; and from these it will appear, that the disease was not incurable before their use, and that the cause of the paralysis, was even then, referred to the diseased spine.

## C A S E

FROM

DR. CHARLTON ON THE BATH WATERS.

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John Waterman, aged thirty-four, by falling from a loaded waggon, had the third and fourth vertebræ of his neck distorted, and in a few hours became paralytic in his lower limbs. His stools and urine at first passed off without his knowledge, and a most violent pain fixed in his stomach, accompanied with an inflation of the whole epigastric region. For some time, he was likewise deprived of the use of his arms; but he had regained their action before he was sent to this place.



He was admitted, Nov. 11th, 1760, six months after his accident. The vertebræ were still displaced; he felt severe pains in his neck; his lower limbs were incapable of motion; his belly was distended to a vast size, was sore to the touch, and if struck on, sounded like a drum; his bowels are now grown costive, and it was with the utmost difficulty he could part with his urine.

Bathing was first used to abate the pain and tension which were occasioned by the distortion of the vertebræ of the neck; but as it added much to his uneasiness, by increasing the distension of the abdomen, he was at length obliged to desist. Pumping on his neck was therefore substituted, by which he found an almost immediate relief. For, as the displaced vertebræ slid gradually back again into their natural situation, the perfect use and feeling of his lower limbs re-

turned. And, wind in prodigious quantities being discharged from the stomach, the swelling of his belly subsided; and, in proportion to its decrease, the action of the bladder, and the peristaltic motion of the bowels were restored.

Without entering into an anatomical description of the descent of the nerves from the brain, and their distribution among the viscera, it will be sufficient to observe, that those nerves which are destined to actuate the stomach and bowels, were, by this distortion of the vertebræ of the neck, impeded in their operations; and consequently, that these organs became in some degree paralytic.

Under such circumstances neither digestion, nor the expulsion of the fæces, could be duly performed.

In the former case, much wind would be generated from the general concoction of food; flatulency being generally in

proportion to the weakness of digestion: in the latter, much air would separate from the obstructed excrements.

Upon these principles, the enormous distention of the belly, in this man's case, may readily be accounted for; and what confirms the explanation is, the subsiding of the swelling upon the started vertebræ's being replaced by the use of the pump.

Hence we see why internal medicines, (for many had been given him before he came into our hospital) had no effect in reducing this distention; it not having been occasioned by any defect in the viscera themselves, but from a want of their being duly actuated by those nerves, to whose influence they are indebted for their powers.

Two reasons have induced me to make these remarks.

The first is, that, could we always dis-

cover the seat of the cause which produces a palsy, and would the situation of the part originally affected, allow of the immediate and direct application of the remedies, such diseases would be less difficult to cure.

The second (which may be of real advantage) is, that in the treatment of paralytic affections, it should be a rule to have the spine of the back pumped, as well as the particular part which appears to be more immediately diseased. This observation, however, does not seem to extend so much to that species of palsy which is produced by the cholic, as to those which are derived from most other causes.

The three following cases are related by Dr. Pierce, a physician, who practised, as he says, at Bath, from the year 1653 to 1697, and ascribes every cure of every disease to the Bath Waters. He justly remarks, however, that a very long use of them, and a very long time is necessary to give them effect in these diseases; and he might have added, that the same time would have been just as effectual in any other place. The third case, was evidently, I think, a disease of the vertebræ, although the doctor did not discover it, and therefore, called it a scorbutical palsy, and classed it among other cases, under this indefinite term.

## CASES

FROM

DR. PIERCE ON THE BATH WATERS.

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Philip Browne, from out of Ireland, aged 14, nephew to Capt. Carpenter, who had a foot-company in garrison, in the castle of Dublin; he took care of this his sister's son, and sent him over with a soldier (his servant) to attend him. They came in July, 66. He had been under the directions of Dr. William Curren, physician to the then Marquess (afterwards Duke) of Ormond, and Deputy of Ireland, and Physician-General to the English Army there. He had tried all manner of methods and medicines for his recovery; and perhaps the more, because a chymist, and the captain being his very

good friend; but all was in vain, which made them, at length, determine to send him to the Bath, which they did, and by letter committed him to my care, the doctor and I having been formerly acquainted at Bristol, as he passed to and from Ireland, when I practised in that city.

I was sorry to see him come in so weak and deplorable a condition, expecting no other than that he would have dy'd upon the place: for besides the great weakness of all his lower limbs, (which they sent him hither for) he had so ill a voyage, that he took cold, which brought upon him a violent cough, with which he discharged very foul phlegm; he had a diarrhœa; both the hypochondria were greatly distended; he was withal hectic; so that I was forced a while to neglect the lameness, and apply to the more urging symptoms.

His case, for which he was sent to the Bath, was, that after a long sickness (the beginning of which was, as I remember, an epidemic fever) he had all his lower limbs, from the middle of his back (where four or five of the vertebræ were started out, by reason of the relaxation of the ligaments, which should hold them together) were not only useless, but senseless; insoomuch, that when he was nipp'd or pinch'd, tho' very hard, or prick'd with a pin, he felt it not: it would have been the same, probably, if a nail had been driven into his foot or leg. He was no way sensible when he had occasion to ease nature, by stool or urine; but at a usual time of the day they set him upon a hollow chair, and both came from him, but when or how, he knew not. He had often cramps, and convulsive motions in his legs and thighs, which would violently draw them upward, whither he



would or not, but of himself could never stir them.

After I had master'd a little those other symptoms, I permitted him to bathe, (and indeed sooner than I otherwise would, upon the importunity of the soldier that came to attend him); he endured it better than I expected, and went on so to do till towards Michaelmas, but without any manifest advantage to his limbs, inso-much, that the soldier press'd earnestly to be sent back again, seeing no good was to be done, and that the winter approaching, they might probably have as bad, or a worse voyage than when they came over. I was for his longer stay, and writ both to the doctor and the captain, what my opinion was, and the reasons of it; in answer to which they left him wholly to my disposal, despairing of ever having him cur'd, if this means failed, and concluding, that if he had

such another passage back as he had hither, it must infallibly kill him: so that if I thought fit to try him another season, I was desired to assist the soldier, in placing the lad for the whole winter, and send him back to be muster'd with the rest of his company, which was done; and the young man left to the care of a woman, that very well discharged her trust. I order'd her to put him into the bath, when ever the wind was not turbulent, or the weather excessive cold, tho' it was winter; which she constantly did; and the first alteration that appear'd was, that when he was rubb'd after his sweating, he began to be ticklish. About Christmas, (I having for some time been out of town, with a patient in the country, for I then attended a riding, as well as a Bath practice) calling to see him as soon as I came home, he told me (with great joy) that he could wag one of his

toes; and pulling off his shoe and stock-in for me to see it, he was better than his word, and mov'd two or three, and in a few days after, all of that foot, and not long after, those of the other also.

In less than a month's time after that, both sense and motion of all the lower parts return'd by degrees; and he could first crawl about the room by the chairs, after that could use crutches; so the soldier returning in the March following, (as was agreed when I sent him back) found him (to his no small admiration) at the door of the house by himself. After one month's bathing that spring, he left off his crutches, and could walk two or three miles in a morning; but the vertebræ still kept out. And indeed I never saw those subluxations well reduc'd, tho' some bold (because ignorant) bone-setters, have here pretended to do it.

Michael King, a soldier, from Tedbury, in Gloucestershire; by a blow on his back with a halbert in Flanders, going upon a party to guard pioneers, was disabled from farther service, and had his discharge, and returned to his friends in Tedbury aforesaid. He had three or four of the vertebræ of his back started; and by reason of that, could not stoop, nor go steadily, but was forced to wear iron boddices, without which he could hardly sit, much less go, upright. He was sent to Bath in April, 1692, and being poor, as a disabled soldier, was admitted into the Hospital for Strangers, where it is my province to advise those, whom the mayor for the time being, commits to my care. I ordered him some preparations for bathing, and sometimes drinking the waters, by which, in a month or five weeks time, he recover'd so much strength as to leave off his iron boddices, and to

go without them, competently well; but the vertebræ still kept out, and will do, I suppose, as long as he lives.

The bath infallibly strengthens a weakened part, and gives ease to a pain'd one, but usually (without other assistances) leaves it in the posture it finds it. Young people by this help have out-grown great deformities of limbs; but I have seldom (or never) seen any grown person to have this part reduced; nor would I ever consent to have it endeavour'd by force, lest the spinal marrow be comprest by it, and the passage of the animal spirits wholly intercepted. For better it is to have an imperfect motion and sense, than to be totally depriv'd of both.

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Mary, the daughter of Mr. Rawlins, of Litchfield, aged 13, was brought to the Bath by her very kind and careful mother, in July, 77, and withal a letter for me from Mr. Watson, of Sutton Colledge, who had been of Lincoln Colledge, in Oxford, when I was there also; he practised physick, as well as exercised his ministry; and this young woman had been some time under his care, as she had been before under Dr. Higge's, of Coventry, and several others, who had try'd all means, both outward and inward; unguents, plaisters, artificial baths, purgings, vomitings, &c. and all to no purpose, for she remain'd a cripple for a year and a half.

The first beginning of her illness was a cold, taken by lying on the ground, upon which a very violent pain seiz'd the muscles and tendons above the right knee, and after that the left also; and then both

the hips, with pain and stiffness, and the right thigh wasted; she could put neither of them out straight, nor suffer herself to be set upright, much less erect herself; she could not suffer her knees to be parted one from another; so greatly was she every where contracted.

The first year she got ease, and some use of her limbs, tho' endeavouring to go, one knee would rub against the other so hard, as to fret off the skin, and cause pain as well as hindrance in going. She came again the next year, and was perfectly recover'd; and some years after marry'd, and hath since been the mother of several children. She both drank the waters, and bathed, and used inward medicines also.

In September, 93, she was in this city, and knew me, tho' I had forgotten her, and helped my memory in some of the particulars above mention'd. She was

then, (and I think is still) wife to one Mr. Handcocke, a brasier, in Pall-Mall, London, and had then no remainder of her former lameness at all.

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The two following *relations* are not, it is true, cases of *caries* of the spine, but they are so nearly allied to the subject, and reflect so much light on the symptoms of this complaint, that the view which it was my intention to give of the disease, and of the state of our information previous to Mr. Pott's remarks, would be incomplete without them.



**CASE BY DR. KNOX.\***

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Paralytic complaints, from diseases, or compression of the medulla spinalis, are more frequent than is generally believed, and there are not many cases of that kind taken notice of by anatomists, from the difficulty that occurs of inspecting the contents of the theca vertebrarum; I, therefore, hope the following case will be acceptable to the public, and excite others to be careful in examining diseases of the spine, by which, useful discoveries may be made, for the relief of many labouring under such complaints.

\* Medical Observ. vol. 3.

Mr. H. aged fourteen, enjoyed a good state of health, previous to his last illness; he was sensible, of a sprightly disposition, and well proportioned for his age. I was called to visit him on the 8th of March last (1766), and found him paralytic, from below the thorax, without any sense of feeling or motion, in his legs, and a total incapacity of retaining urine and stools.

He gave me the following account of his case, which was confirmed by his father, and Mr. Partridge, his apothecary. He said, that, two days before last Christmas, in playing with one of his companions, he was pulled backwards, and fell upon the edge of a chair, which hurt him a little between the shoulders: when he came home in the evening, he complained, that, upon raising his head, he had pain striking through, and across, his chest, and his father observed that he

held his chin down towards his breast; but, as he concealed his having had a fall, and as his complaints were not very troublesome, he went to school in the country, where he remained till the 29th of January, but growing worse, with paralytic symptoms in his legs, he was brought to town. The day he came home he had very little use of his legs; however, in the evening, after having them well rubbed, he made shift to scramble up stairs, but fell down on the floor of the bed-chamber, and afterwards lost the use of his legs entirely. On the 7th of February, he lost the power of retaining his stools, and two days after that, his urine likewise came away involuntarily.

From the time of the fall, to the day of his death, it was about three months; but, three days before he died, he complained of shooting pains in his arms, which lasted about half a minute at a

time, leaving him quite easy, but frequently returning.

The day before his death, he lost the use of his arms, and the motion of his head; complained of violent shooting pains through his head, was perfectly sensible to the last moment, and died totally paralytic, on the 31st of March, without a groan, or convulsive motion.

During the time I attended him, it was impossible to make any observations on his urine, as it drained off insensibly; but, notwithstanding the paralytic state of the sphincter vesicæ, it being about the period of puberty, one thing was very remarkable, that he had frequent, or almost constant erections of the penis. The paralytic state of the intestines made it necessary to keep his body open; to effect which, he took almost every night some gentle solutive medicine, except twice, that I gave him a few grains of

calomel going to bed at night, purging it off next morning with a vermifuge purge, upon a supposition, that worms might have been a cause of his complaints, as they sometimes occasion very unaccountable paralytic affections. I inspected the stools, from the operation of the purge, which were a little slimy, but there was no other particular appearance.

His appetite was perfectly good, nor did he ever complain of indigestion.

His pulse, until two days before his death, was natural; sometimes, indeed, after a bad night, which was now and then the case, it was a little quickened, and he would then complain, that he could not find an easy posture in bed.

Upon examining the back, after being informed that he had a fall, there appeared a fulness, or tumor, between the scapulæ, on each side of the spine; however, he was scarce sensible of any pain

from it, except when it was pressed pretty hard, and then he said he felt a little uneasiness.

He frequently complained of great oppression, and a pain darting through his breast; upon his legs being moved, he complained as if painful strings (his own expression) were drawing downwards from his breast.

In the course of this disorder, many medicines were given internally, and various external applications were tried. Upon the dissection of the body, which was opened by Mr. Vanse, in the presence of Dr. Hunter, Mr. Hunter, Mr. Hewson, and Mr. Partridge, the following appearances were observed: the viscera of the abdomen, and thorax, were perfectly sound; there were no adhesions of the lungs, no unusual quantity of water in the thorax or abdomen, the heart, and large vessels, were in a na-

tural state, there were no worms in the intestines.

In sawing through the cranium, a considerable quantity of bloody water was discharged, which, no doubt, came from between the dura and pia mater; but, as we were not present at the time this particular operation was made, we could not so well determine the quantity of the water, nor the place, from which it ran out.

The cerebrum and cerebellum were perfectly sound, only on the thalami nervorum opticorum there were two prominences, or projections, about the size of a large pea; these were situated upon the upper part of the thalami, but, when cut into, they did not appear to differ, in consistence or texture, from the natural state of the parts, and the rest of the substance was not in any way diseased.

There was no uncommon quantity of water in the ventricles, and the nerves, rising from the brain, seemed perfectly sound.

In examining the fore part of the spine in it's whole course, we found it without any distortion, or unnatural appearance; but, on raising the lower parts of the body, there drained from the theca vertebrarum, through the foramen magnum of the occiput, a considerable quantity of a bloody serous liquor.

Upon turning the body, the unnatural fulness upon the upper part of the back, which had been observed in his life-time, was very apparent: we therefore resolved to see what occasioned it, and to find out, if possible, any disorder in the spine that might explain the paralytic symptoms.

After removing the integuments and muscles, we found, on each side of the



spinal processes, from about the first vertebræ of the back downwards, two flat tumors, lying parallel one to the other. The tumor on the left side was rather the largest, between three and four inches long, one inch and a half broad, and about an inch in thickness.

These tumors lay close to the bones under the muscles, and filled up completely the cavity between the spinal and transverse processes; the substance of that on the left side, had the appearance of a diseased strumous gland; but the other was still more tender, and its internal part seemed to be merely a bloody pus.

We found likewise, that the tumors communicated, at one or two places, between the spinal processes, and that the tumor on the left side, seemed to have a root, if I may be allowed the expression, which entered the theca vertebrarum, just

between the transverse processes of the fourth and fifth vertebræ of the back. In the operation of sawing out five or six of the spinal processes, we found a soft pulpy substance working out from the theca; at first we suspected it to be the medulla spinalis, dissolved into a pappy mash, but, upon nearer examination, we found the spinal marrow itself perfectly sound, but behind it, on the outside of the dura mater, there was an unnatural substance, about four inches in length, which lay closely pressed and adhering to the spinal marrow: this substance was exceedingly tender and was what had worked out, and had been at first taken for a diseased medulla spinalis, in the operation of sawing the spinal processes of the vertebræ.

When it was taken out of the theca, with that part of the spinal marrow to which it adhered, and gently shaken in

water, a great part of it dissolved. What remained was of a very tender texture, and was put into spirits. It is now preserved in Dr. Hunter's collection.

ROBERT KNOX.

**CASE BY DR. MATY.\***

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Count de Lordat, a French officer of great rank and merit, travelling in April 1761, in order to join his regiment, had the misfortune to be overturned from a pretty high and steep bank. His head pitched against the top of the coach, his neck was bent from left to right, his left shoulder, arm, and especially his hand, were considerably bruised. At first he felt a good deal of pain along the left side of his neck, but neither then, nor at any other time, had he any faintings, vomitings, or giddiness.

As the spot, where the accident hap-

\* Medical Observ. vol. 3.

pened, was at a considerable distance from any resting-place, the Count was obliged to walk to the next town in a cold day, and there finding very little inconvenience from his fall, and but indifferent accommodations and assistance, he pursued his journey, and it was not till the sixth day that he was let blood, on account of the pain in his shoulder and the contusion of his hand, which were then the only symptoms he complained of, and of which he soon found himself relieved.

The campaign, which began soon after, was a very trying one. The Count went through all the fatigues of it, and was often obliged to lie in the open air. Towards the beginning of the winter, he began to find a small impediment in uttering some words, and his left arm appeared weaker. His surgeon advised the use of fomentations upon the parts affected, together with mineral waters,

warm baths, and a milk diet. But, as the symptoms were yet but slight, and rather imputed to the fatigues which he had since undergone, than to the fall, the Count did not keep to rules, and though he had promised to go to Aix-la-Chapelle, he was prevented by business the whole winter, till his duty in the spring called him again to the field. Having suffered still more this year than the former, from the severities of the campaign, he found the difficulty in speaking and moving his left arm considerably increased. His complaints came on so fast, that the general, upon the representation of the Count's surgeon, ordered him to go to Bourbonne, a place in Champagne, famous for it's thermal waters. He bathed, was pumped, and drank the waters; his speech for some days became freer, but, upon his return to Paris, so far was he from being cured, that the

wasting and palsy of the left side increased more and more. Many remedies were then proposed, but none or very few tried, and in the beginning of the next spring he went to Balaruc. The very active sulphureous waters of that place, far from being serviceable in restoring the power of moving to the parts, which had lost it, brought on involuntary convulsive motions all over the body. The left arm withered more and more, the Count could hardly utter a few words, a spitting began, and on his return to Paris in December 1763, he consulted several physicians. Various means were employed to relieve him, but all to little purpose. Frictions and sinapisms were successively tried, and an issue made by a caustic, was kept open for some time, without any effect. Milk diet and warm baths succeeded no better; and, being sent the next summer to bathe in the sea,

the patient came back in September rather worse than he was before.

It was soon after this, *viz.* in October 1764, that, happening to be at Paris, I was desired to see the Count. Three years and a half were now elapsed since his fall, and the unsuccessful trial of every remedy, which could be thought of, left very little room to hope, that any thing could be serviceable to him.

A more melancholy object I never beheld. The patient, naturally a handsome, middle-sized, sanguine man, of a chearful disposition and an active mind, appeared much emaciated, stooping and dejected. He still walked alone with a cane from one room to another, but with great difficulty, and in a tottering manner; his left hand and arm were much reduced, and could hardly perform any motion; the right was somewhat benumbed, and the Count could scarcely lift



it up to his head; his saliva was continually trickling out of his mouth, and he had neither the power of retaining it, nor of spitting it out freely. What words he still could utter were monosyllables, and these came out, after much struggle, in a violent expiration, and with such a low voice and indistinct articulation, as hardly to be understood, but by those who were constantly with him. He fetched his breath rather hard; his pulse was low, but neither accelerated nor intermitting. He took very little nourishment, could chew and swallow no solids, and even found great pain in getting down liquids. Milk was almost his only food. His body was rather loose, his urine natural, his sleep good, his senses and the powers of his mind were unimpaired; he was attentive to, and sensible of every thing, which was said in conversation, and shewed himself very desirous of joining in it, but

was continually checked by the impediment in his speech, and the difficulty which his hearers were put to. Happily for him, he was able to read, and as capable as ever of writing, as he shewed me by putting into my hands an account of his present situation, drawn up by himself; and I am informed that he spent his time to the very last, in writing upon some of the most abstruse subjects.

As no local alteration or tumor, either in the neck or any where else, was ever observed, and the symptoms came on gradually, the family were divided as to the cause of the disorder; most of them ascribing it to some hurt in the head itself, occasioned by the fall, and others to some hereditary or accidental defect. The physician, Dr. Bellet, a very sensible and experienced practitioner of Paris, and one of the King of France's physicians, and the surgeon, both joined with

me, in thinking that the seat of the disorder lay within some of the upper cervical vertebræ, and that the cause might be an induration or thickening of the membranes of the medulla spinalis, occasioned by some straining of them in the fall, by the sudden bending of the neck. It was not difficult to prognosticate, that the case was altogether out of the reach of any assistance from art, that death was unavoidable, and what was worse, that it would come on gradually and slowly. As all active, and what are called nervous, medicines had been found very disagreeable to his stomach; that fomentations, whether emollient or acrid, blisters, caustics, &c. had been used in vain, I could think of nothing that could be tried with any appearance of success, except gentle mercurial frictions upon the part, which I supposed to have been principally affected. They were tried after I

came away, but no good effect was observed, sufficient to warrant their continuance; and the constant spitting was supposed to be an obstacle to the use of them. Perhaps in time, medicine, growing bolder than it now is, will, in these desperate cases, venture upon a perforation of the bony theca of the spinal marrow, and imitate the operation of the trepan, either to discharge fluids, or to remove compressing bodies, to bring thickened membranes to suppuration, or to exfoliate carious bones. I must however ingenuously confess, that the prospect seems as yet very far from being flattering. The spinal channel appears to be altogether inaccessible on its fore part, in its whole extent; the quantity of flesh, under which the roots of the spinal processes of all the vertebræ are buried; the difficulty of cutting them out either with a chissel or a saw; the danger of bruising

the medullary substance itself in such an operation; and, I may add, in many cases, the great uncertainty of the precise part, where alone the opening could be useful; are very discouraging. If it be said that, in many cases of palsy in the lower extremities, the affected part of the spine is pointed out, by an evident starting or swelling of the spinal processes somewhere in the back or loins, I must observe, that this symptom does not commonly shew itself, till the bodies of the vertebræ, grown carious, are crushed under the weight which they sustain; a circumstance which renders the case almost intractable.

These difficulties are indeed such as to leave little hope, and I must submit it to the masters of our own, and of the surgical art, whether they be not absolutely insurmountable. Yet, when I consider how much both have been assisted

and extended by improvements in natural philosophy, manual dexterity, repeated observations, and, above all, by the unknown and unexhausted resources of nature, I cannot help expressing my zealous wishes, that what I now throw only out as a mere hint, may, some time or other, lead to useful experiments upon the dead, and prudent trials upon the living. And where might some degree of boldness be more excusable, or any step towards affording the least chance of relief, perhaps only of hope, be deemed more glorious, than in cases where humanity is so deeply concerned; since the worst that could happen, seems hardly to equal the horror of a gradual decay of the natural, animal, and vital functions, unavoidably, though always too late, relieved solely by death.

This was the fate of the unhappy French gentleman, about five months

after I had seen him, as will appear by the following extract of a letter, which I received from his physician.\*

\* The extract which is here alluded to, may, as far as the disease is concerned, be condensed into the following passage; for the remainder, which is chiefly a detail of the dissection of the parts which were not diseased, is not very important.

“ We chiefly took notice of the medulla oblongata,  
“ This was greatly enlarged, surpassing the usual size  
“ by more than one third. It was likewise more  
“ compact. The membranes, which, in their conti-  
“ nuation, inclose the spinal marrow, were so tough  
“ that we found great difficulty in cutting through  
“ them, and we observed this to be the cause of the  
“ tendinous texture of the cervical nerves. The mar-  
“ row itself had acquired such solidity as to elude the  
“ pressure of our fingers; it resisted as a callous  
“ body, and could not be bruised. This hardness  
“ was observed all along the vertebræ of the neck,  
“ but lessened by degrees, and was not near so con-  
“ siderable in the vertebræ of the thorax.”

## EXPLANATION OF PLATES.

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### PLATE I.

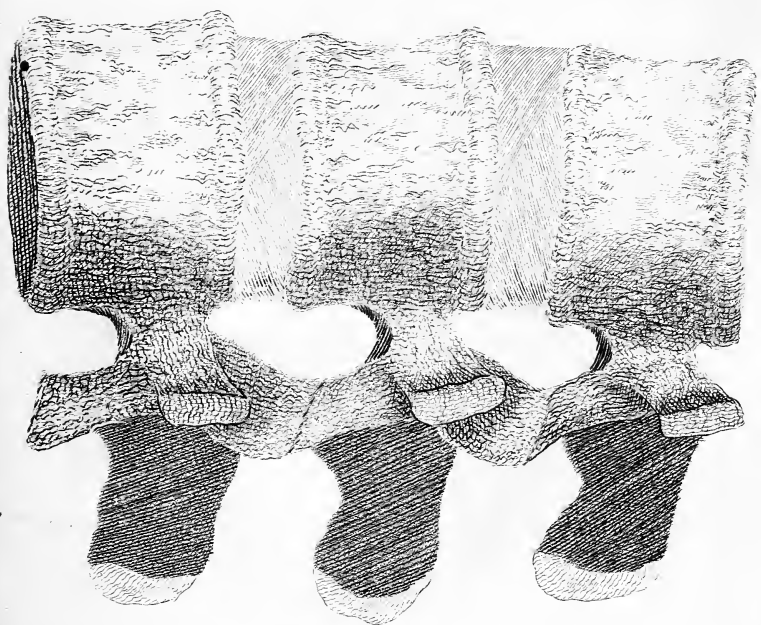
THIS plate shews an anchylosis of three dorsal vertebræ; the disease being arrested and cured before any destruction of bone had taken place, the intervertebral cartilages only have been destroyed. It appears that although no great or very visible curvature had taken place in this case, yet the absence of the intervertebral substance, produced a slight elevation of the spinous processes.

The diseased bone is accompanied with a sketch of three lumbar vertebræ, in a healthy state, that the two conditions may be contrasted—the intervertebral substance being present in the one, and destroyed by disease in the other. It shews also that a loss of the intervertebral substance in these vertebræ, would not produce the same curvature as in the others, the spinous processes being horizontally placed and shorter.

### PLATE II.

THIS is an engraving of a diseased spine, in which the parts principally affected with caries are the *sides*, and not the anterior part of the vertebræ. It is a generally received opinion, that no curvature of the spine to one side is a carious incurvation; but the marks of caries and the anchylosis in this case, sufficiently demonstrate the nature of the disease.

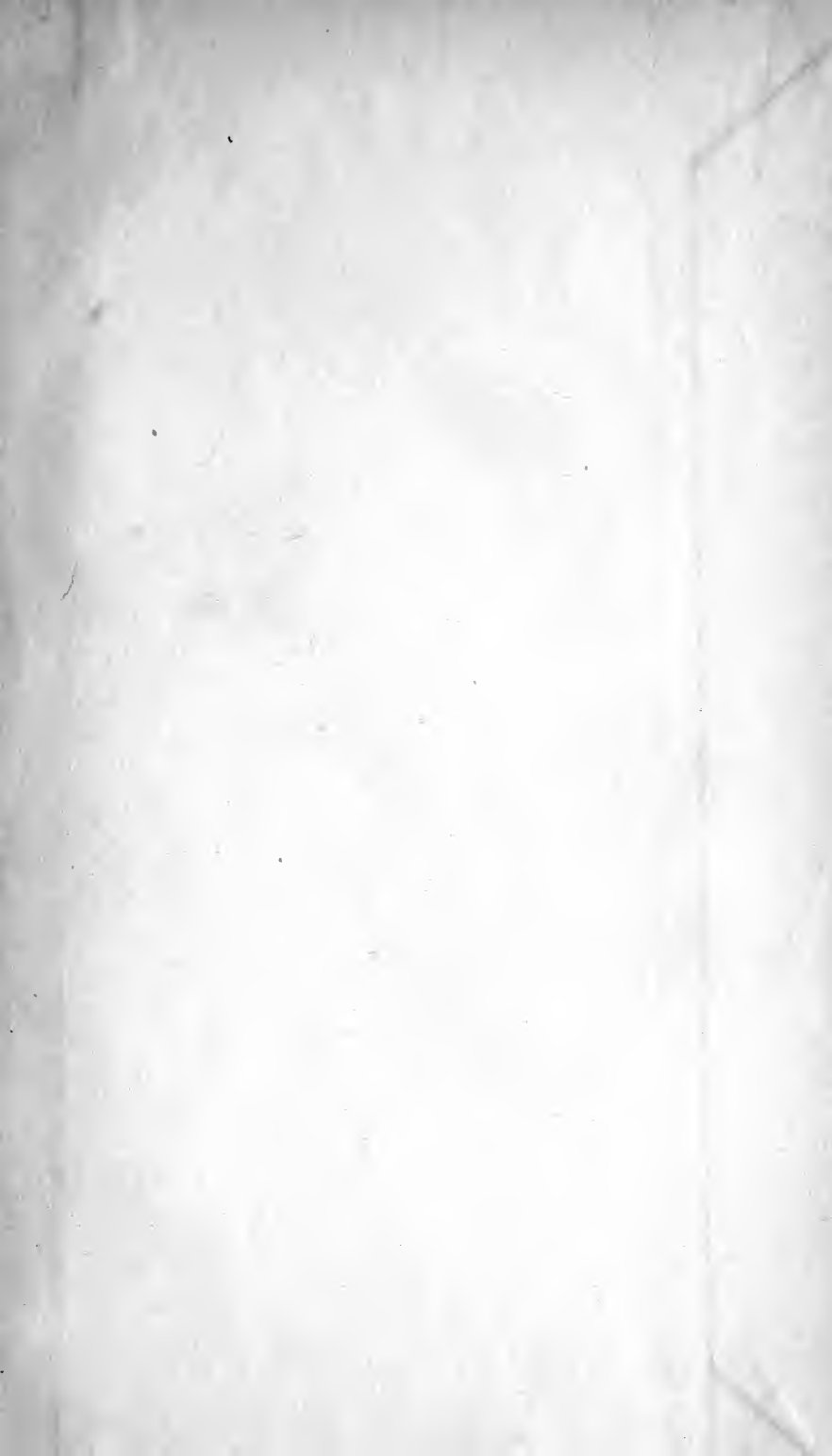












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